
OLIG2 is differentially expressed in pediatric astrocytic and in ependymal neoplasms.

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Public Summary:

Scientific Abstract:

The bHLH transcription factor, OLIG2, is universally expressed in adult human gliomas and, as a major factor in the development of oligodendrocytes, is expressed at the highest levels in low-grade oligodendroglial tumors. In addition, it is functionally required for the formation of high-grade astrocytomas in a genetically relevant murine model. The pediatric gliomas have genomic profiles that are different from the corresponding adult tumors and accordingly, the expression of OLIG2 in non-oligodendroglial pediatric gliomas is not well documented within specific tumor types. In the current study, the pattern of OLIG2 expression in a spectrum of 90 non-oligodendroglial pediatric gliomas varied from very low levels in the ependymomas (cellular and tanycytic) to high levels in pilocytic astrocytoma, and in the diffuse-type astrocytic tumors (WHO grades II-IV). With dual-labeling, glioblastoma had the highest percentage of OLIG2 expressing cells that were also Ki-67 positive (mean = 16.3%) whereas pilocytic astrocytoma WHO grade I and astrocytoma WHO grade II had the lowest (0.9 and 1%, respectively); most of the Ki-67 positive cells in the diffuse-type astrocytomas (WHO grade II-III) were also OLIG2 positive (92-94%). In contrast to the various types of pediatric astrocytic tumors, all ependymomas WHO grade II, regardless of site of origin, showed at most minimal OLIG2 expression, suggesting that OLIG2 function in pediatric gliomas is cell lineage dependent.

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